

**IN THE CLAIMS:**

Please cancel claims 1-10 and 22-31, and enter the amendments and new claims shown below.

1-10. (Cancelled)

11. (Currently Amended) A chemical reactor system for generation of high purity gas, comprised of a source of microwave radiation, a microwave transparent, gas tight barrier, a microwave reflecting enclosure into which said source of microwave radiation is directed, a manifold for gas delivery adapted to receive generated gas from said enclosure, a solvent vapor removal device adapted to remove solvent vapor from the generated gas, a gas concentration sensor for sensing gas concentration in the generated gas, and a feed-back control system adapted to control gas generation rate in said enclosure.

12. (Original) The system of Claim 11, wherein the microwave radiation source has a frequency of 0.9 GHz, or 2.41 to 10 GHz.

13. (Currently Amended) The system of Claim 11, wherein the microwave transparent barrier ~~is constructed from materials chosen from the group~~ comprises a material selected from the group consisting of Teflon, fused silica, silicon dioxide, boron nitride, or graphite.

14. (Original) The system of Claim 11, wherein the microwave reflecting enclosure is constructed from an electrically conductive material with a conductivity of a least  $10^{-3}$  ohm/cm.

15. (Original) The system of Claim 11, wherein the microwave reflecting enclosure has a smallest dimension of at least twice the wavelength of the microwave radiation.

16. (Currently Amended) The system of Claim 11 and also comprising a precursor material received in said microwave reflective enclosure, and wherein the precursor material is selected from the group consisting of hypophosphorous acid, hypophoric acid, and an alkaline slurry of red phosphorous.

17. (Original) The system of Claim 11 wherein the vapor removal device contains silica gel.

18. (Original) The system of Claim 11, wherein the feedback control system includes a microprocessor controlled temperature feedback loop to a raw material feed pump, and microwave radiation source power supply

19. (Currently Amended) The system of Claim 11 wherein the feedback control system is adapted to modulates the electrical power to the microwave radiation source to maintain a constant gas delivery pressure.

20. (Currently Amended) The system of Claim 11 wherein the feedback control system is adapted to modulates the electrical power to the microwave radiation source to provide a variable gas flow rate.

21. (Currently Amended) The system of Claim 11 wherein the feedback control system is adapted to modulates the microwave radiation frequency to control the reaction product selectivity.

22-31. (Cancelled)

32. (Currently Amended) A chemical reactor system for generation of high purity gas for semiconductor fabrication, comprised of:

a source of microwave radiation;

a reaction chamber for receiving a precursor material for generating said gas, said reaction chamber adapted to generate said gas under pressure;

a microwave transparent, gas tight barrier through which said source of microwave radiation is directed into said reaction chamber;

a microwave reflecting enclosure into which said source of microwave radiation is directed;

a manifold for gas delivery adapted to receive the generated gas;

a gas concentration sensor for sensing gas concentration in the generated gas; and

a solvent vapor removal device adapted to remove solvent vapor from the generated gas.

33. (Original) The system of claim 32, also comprising a supply of precursor material coupled to said reaction chamber.

34. (Currently Amended) The system of claim 33, also comprising:

~~a gas concentration sensor for sensing gas concentration in the generated gas~~; and

a feed-back control system to control gas generation rate in said reaction chamber.

35. (New) The system of claim 32, also comprising a semiconductor fabrication device fluidly coupled to said manifold for delivery of the generated gas to the semiconductor fabrication device.

36. (New) The system of claim 35, wherein said semiconductor fabrication device is a chemical vapor deposition reactor or an oxidation furnace.

37. (New) The system of claim 32, also comprising a precursor material for generating said gas received within said reaction chamber.

38. (New) The system of claim 32, configured to generate said high purity gas containing no more than 100 parts per million of water vapor.

39. (New) The system of claim 37, wherein said precursor material is suitable for generating phosphine gas.

40. (New) The system of claim 37, also comprising a high boiling point liquid received in said reaction chamber for absorbing microwave radiation directed into said reaction chamber.